What Women Want in Birth (and Why We Should Listen to them!)

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Change drivers in maternity care

- Listening to Mothers II survey, 2006
- Evidence Based Maternity Care report, 2008 (Milbank report)
- 2020 Vision For a High-Quality, High-Value Maternity Care System report, 2010
- Six Practices that Promote Safer, Healthier Birth, Lamaze 2009
- ACNM Position Statement, 2009

Cook et al., 2010; Hodnett, 2002

Water Immersion for Labor and Birth

Ancient Egypt

The “birth house”

Clach Bhan, Scotland

Chumash tribe of central California
Birthing Suite in Nelspruit, Mpumalanga (South Africa)

What women say...
- High satisfaction
- Pain modifier
- Improve relaxation
- Feel sheltered, protected; sense of privacy
- Movement improved; supported by the water


Cochrane Review
- Water immersion associated with significant reductions in:
  - the use of epidural, spinal, paracervical anesthesia/analgesia
  - duration of 1st stage
  - women’s report of pain
- No difference in assisted vaginal births, C/S, oxytocin use, perineal trauma, maternal infection
- No difference in Apgar score < 7/5 mins, NICU admissions, neonatal infections

Cochrane author’s conclusions
- No evidence of increased adverse effects to the fetus/neonate or woman from labouring in water or waterbirth
- No trials assessed immersion in third stage of labour, or compared different types of pools/baths

Benefits
- Altered state of consciousness
- Relaxation; the “ah” effect
- Maternal satisfaction, self esteem
- Economic?

Effect of immersion on labor dystocia (RCT)
- Compared w/ standard augmentation*:
  - operative birth rates unchanged
  - epidural analgesia rates lower
  - overall length of labor unchanged
  - reported pain decreased
  - satisfaction increased
*standard augmentation = AROM + oxytocin
**Physics**
- Buoyancy
- Specific gravity
- Density
- Hydrostatic pressure
- Specific heat

**Physics principles**
- Buoyancy:

**Physics, cont.**
- Specific gravity & density

**Physics, cont.**
- Hydrostatic Pressure

**Physics, cont.**
- Specific heat

**Other hydrostatic effects of water immersion**
- Increased perfusion
- Diuresis

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### Theoretical risks to mother
- Infection
- Hemorrhage
- Emboli
- Slow progress


### Theoretical/actual risks to baby
- Fetal tachycardia
- Infection
- Polycythemia
- Hypoxic injury, water aspiration, drowning
- Cord avulsion

### Breathing efforts of fetus
- PGE2 and adenosine
- Dive reflex
- Hypoxic events/gasping

### Nativiti Birth Center, Woodlands, Texas

![Image of a birthing pool](image1)

“Aside from the benefits of hydrotherapy, the mother will enjoy the spacious service area, a height adjustable birthing seat, a raised seat for wading, an attachable seat for her companion, a swing-out grab bar for hanging, and programmable massaging jets. Tub also features a waterfall simulation to entertain the mother. A gentle lighting system is also integrated.”

The “Full Circle Waterbirth Suite”

![Image of the Full Circle Waterbirth Suite](image2)
Old habits die hard...

Options for Pain Relief

Childbirth and Maternal Satisfaction
- Hodnett 2002 Systematic review

How Women Rate Labor Pain

"Gas and Air"
Current uses of nitrous oxide

- Industrial applications
- Rocket motors
- Racing
- Whipped cream

Medical uses

- Operating rooms
- Emergency medicine
- Burn units

NaO use worldwide

Used commonly in numerous countries with high standards for medical care:

- United Kingdom
- Canada
- Australia
- Norway
- Finland
- New Zealand

Why offer nitrous oxide for labor?

- Long history of safe use worldwide
- Few analgesic alternatives in US
- Women should have access to all safe and effective options
- Consumer demand

Advantages of nitrous oxide

- Does not diminish UA or slow labor
- Does not impact pushing ability
- No fetal effect
- May allow patient to avoid narcotics and/or epidural
- Additional option for less medicated birth
Disadvantages of nitrous for labor
- Side effects: dizziness, nausea
- Mobility: proximity of apparatus
- Machinery availability

What should women expect from nitrous use?
- Variable pain relief
- "I don't care" factor
- Feeling of euphoria
- Decreased anxiety

N2O safety for fetus/neonate
- Neonatal depression has not occurred
- No known effects on breastfeeding
- Little research, but no noted ill effects after extensive use (50 years?) for labor analgesia in other countries

And what about apoptosis?
Apoptosis happens with use of:
- Anesthetic gases
- Sedatives
- Hypnotics
- Narcotics

Birth Positions
Upright position affect on UC’s

- Less frequent, greater amplitude
- Gravity + fetal weight = 10-35 more mg Hg of pressure
- Higher fetal PO, pH, and lower pCO₂ levels at birth
- Molding = adaptive and unaffected
- Squatting increases pelvic diameter by up to 30%!

Roberts, 2003

Birth Stools

Closed Glottis Pushing aka “Purple Faced Pushing”
“We have a secret in our culture and it’s not that birth is painful, it’s that women are strong...”

On the horizon?

Thank you... any questions?